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SOME CALIFORNIA BEES

BY T. D. A. COCKERELL

(Continued from page 48)

Osmia albomarginata Cockerell, Timberlake MS., sp. n.

Female. (Type). Length about 7 mm.; anterior wing 4.5 mm.; black, the head, thorax and abdomen very obscurely greenish; pubescence white, dense and pure white at sides of face, long and abundant on pleura, metathorax and scutellum, thin and slightly grayish on vertex and mesothorax, thin and white on clypeus, but hardly visible in front view, when only the dense pure white bands at sides of face (reaching part way up front and ending below a considerable distance above mandibles) are conspicuous; labrum black; mandibles black, tridentate; clypeus entirely dull, convex, excessively finely and densely punctured; antennæ black; vertex closely but distinctly punctured; mesothorax and scutellum somewhat shining but not polished, very closely and finely punctured; area of metathorax dull; tegulæ dark reddish; wings dilute brown, basal nervure almost reaching nervulus, second cubital cell receiving recurrent nervures about equally distant from base and apex; legs black, with thin white hair on hind tibiæ, seen from outer side forming a slender pure white band along hind margin; hair on inner side of hind basitarsi white; spurs light red; abdomen rather long and narrow, the basal half moderately shining, the apical half finely pruinose; first tergite with a long tuft of pure white hair at each side, second with an interrupted white band, third to fifth with entire bands; ventral scopa very pale yellowish.

Male. Length nearly 7 mm.; mandibles bidentate; hair of clypeus dense and white, of front and scutellum yellowish, long and abundant; abdomen pure black; sixth tergite broadly rounded and simple; hind coxæ with a red thickened margin, under a lens looking like a small shining red apical process.

Type ♀ at flowers of *Phacelia heterophylla*, Swartout Valley, California, June 3, 1928 (Timberlake). Male at *Phacelia distans*, Puente Hills, April 12, 1925 (Timberlake).

This is not a desert species. The notauli are linear.

Resembles *O. exilis* Sandhouse, which is much more metallic

in the female, and in the male the abdomen is more or less metallic.

The male genitalia are quite similar to those of *Osmia (Hoplitis) mesæ* (Ckll.) Those of *O. arefacta* are of the same pattern, but the stipites are stouter than in *O. albomarginata.*

O. copelandica Ckll. is easily known from *O. albomarginata* by the anterior margin of mesothorax broadly polished and shining.

Osmia (Atoposmia subg. n.) triodonta Cockerell, sp. n.

Male (Type). Length about 9 mm. anterior wing 7; robust, black, head and thorax with abundant long hair, white on face, cheeks, pleura and metathorax, yellowish on head and thorax above; head rather large, facial quadrangle about square; eyes black; labrum and mandibles black, the mandibles tridentate, with the apical tooth very long, the other two short but sharp; flagellum dusky red beneath; cheeks very broad, strongly hairy except a broad zone next to eyes; vertex dull, very finely punctured; mesothorax and scutellum polished and exposed on disc; area of metathorax triangular, shining; tegulæ pure black; wings brownish hyaline, stigma and nervures black; basal nervure falling a little short of nervulus; second cubital cell long, receiving first recurrent nervure more distant from base than second from apex, but distance of first from base is not nearly equal to length of intercubitus; legs black with white hair; tarsi somewhat rufescent at tip, hair on inner side of basitarsi orange; hind tibiæ robust, with a short apical spine; abdomen convex, basal half shining, sides and venter with much white hair; tergites with rather thin but broad bands of slightly yellowish hair, sixth with a little tooth at each side, seventh broad, with a lobe at each side and a small obtuse projection between, so that it is briefly trilobed; third sternite deeply emarginate, the incision fringed with pale yellowish hair. The Lone Pine Canyon one is smaller.

Female. Length about 7.5 mm.; mandibles very broad, tridentate; clypeus dull, densely and minutely punctured, convex, with short red hair on apical part; metathorax with a large deep oval pit; bands on first three tergites clear white, broad, more or less interrupted on first two; eyes black; hind spurs black and very long; ventral scopa very long, pale yellow.

Type male at flowers of *Pentstemon heterophyllus*, Mt. Diablo, California, about 3,800 ft., June 14, 1933 (Timberlake). Male at *Nama parryi*, Lone Pine Canyon, about 5,900 ft., June 16, 1928 (Timberlake). Female at *Pentstemon spectabilis*, Lone Pine Canyon, about 4,000 ft., June 16, 1928 (Timberlake).

Timberlake has long had this under a manuscript name, but

this name has been used in Osmia, so I have substituted another, having the same significance.

The structure of the end of the abdomen is similar in principle to that of *Alcidemea biscutellæ* Ckll. (taken by Timberlake at flowers of *Larrea tridentata*, La Quinta, Calif.) but in that species the median tooth is very long and spine-like. *A. biscutellæ* (male) has the hair of face long and pure white, mandibles bidentate, spines on hind coxæ, and angulate process at base of hind trochanter. The female *A. biscutellæ* has mandibles tridentate; labrum broadly rounded at end; clypeus with an obtuse median ridge, not reaching apex; vertex polished, with well separated punctures; tegulæ dark, with red spot, and broad testaceous border; base of metathorax shining; hair on inner side of hind basitarsi light orange; first recurrent nervure slightly more distant from base of second cubital cell than second from apex; abdomen with white scopa, and white hair-bands, interrupted on first tergite. This species was described (1897) from the male, about 13 mm. long, taken in New Mexico.

Osmia triodonta is remarkable for the extremely long mouth parts, over twice as long as in *O. viguierœ*. The maxillary palpi are five jointed, the third joint very long (in *O. viguierœ* they are short and stout, none of the joints very long).

The notauli are short and linear; the mesonotum has a median groove on anterior half. The three-toothed male mandibles are also highly characteristic, as pointed out by Mr. Timberlake. These characters place the insect in a distinct subgenus, which may be called **Atoposmia.**

The insects described above are by no means typical *Osmia*. Timberlake notes that the maxillary palpi are short and usually appear to be four-jointed, except in *Atoposmia*, which has long palpi, evidently five-jointed. The following key will serve for the ready separation of the species:

Males.....1.
Females.....5.

1. Mandibles tridentate; tegulæ dark; area of metathorax polished; labial palpi extremely long; tergite 6 with entire shining margin, but lateral angular projections; tergite 7 briefly trilobed, the lateral lobes obtuse, the middle one small.....
.....*triodonta* Ckll.

—. Mandibles bidentate.....2.

2. Tegulæ clear red; base of metathorax shining.....3.

—. Tegulæ dark; end of abdomen simple, not dentate....4.

3. Knees black; apex of abdomen with a finger-like process, which is, however, due to the genitalia, the margin of the tergite being unarmed....*arefacta* Ckll.

—. Knees red; apex of abdomen sharply tridentate..*xerophila* Ckll.

4. Base of metathorax shining....*viguieræ* Timberlake MS.

—. Base of metathorax dull....*albomarginata* Timberlake MS.

5. Femora bright red; ventral scopa white; area of metathorax polished....*timberlakei* Ckll.

—. Femora black....6.

6. Tegulæ bright or clear red or testaceous; ventral scopa white; area of metathorax shining (in *O. phaceliarum* dull when seen from above, but shining when seen from behind)....7.

—. Tegulæ dark brown or black; legs black, or at most small joints of tarsi reddish....12.

7. Mesothorax brassy or greenish; abdomen greenish.... ....*arefacta* Ckll.

—. Mesothorax pure black....8.

8. Labrum bright red; wings dusky; basal nervure falling short of nervulus....9.

—. Labrum black or very dark....10.

9. Larger; mandibles entirely bright red except narrow apical margin....*rupestris* Ckll.

—. Smaller; mandibles dark, the apical part obscurely reddish ....*phaceliarum* Ckll.

10. Small, length 5-5.7 mm....*palmarum* Ckll.
Larger, 7.5 to 8.5 mm....11.

11. Knees black; more robust; abdominal bands broader and pure white....*robustula* Ckll.

—. Knees red; less robust; abdominal bands narrower and not clear white; margins of tergites conspicuously reddened ....*xerophila* Ckll.

12. Ventral scopa brown; disc of mesothorax with large punctures; mandibles with subapical tufts of red hair.... ....*enceliæ* Timberlake MS.

—. Ventral scopa red; disc of mesothorax finely punctured, shining, mandibles without tufts of red hair....*shastensis* Ckll.

—. Ventral scopa white, or tinged with yellow or red....13.

13. Area of metathorax dull and granular; small species....14.

—. Area of metathorax polished....15.

14. Larger and more robust, distinctly greenish; second cubital cell long, receiving first recurrent nervure far from base ....*albomarginata* Timberlake MS.

—. Very small and slender; pure black; clypeus convex, supraclypeal area conspicuously shining; tongue long; second cubital cell relatively short, receiving first recurrent nervure near base (Big Pine, Calif., at *Phacelia heterophylla*, July 2, Cockerell)....*Chelostoma minutum* Crawford (det. Timberlake)

15. Abdominal bands broad, white, wings dusky; mouth parts greatly elongate.....*triodonta* Ckll.
—. Abdominal bands narrow; mouth parts not greatly elongated..16.
16. Robust species; hair of head and thorax above coarse and fulvous; eyes green; clypeus closely punctured, with a broad smooth margin, which is somewhat turned upward, and so not evident in front view; end of labrum with hooked hairs; ventral scopa yellowish.....*hemizoniæ* Ckll.
—. Hair of head and thorax above not at all fulvous.....17.
17. Comparatively large and robust, the dull clypeus with a broad shining margin; ventral scopa suffused with pale ferruginous; first recurrent nervure not nearly so far from base of second cubital cell as length of intercubitus..*viguieræ* Timberlake MS.
—. Smaller, about 7 mm. long; not so robust; ventral scopa white.....18.
18. Clypeus seen from in front appearing broadly and deeply emarginate, owing to a broad triangular depression, but actual margin straight; first recurrent nervure as far from base of of second cubital cell as length of intercubitus (Auburn, Placer Co., Calif.)....*Ashmeadiella coquilletti* Titus (Det. Sandhouse)

Other species of Ashmeadiella may be compared, as *A. prosopidis* Ckll., a small species with reddish tegulæ; *A. crassa* Ckll. the clypeus conspicuously covered with long pale hair, and outer margin of tegulæ red.

In the course of working over the California bees Mr. Timberlake and I discovered a number of matters requiring revision, as set forth below. The synonymy given was determined by Timberlake, but is accepted by me, after due consideration of the evidence.

DIADASIA LATICAUDA Cockerell 1905

Based on the female, *D. crassicauda* Ckll., 1915, is the male.

DIADASIA NITIDIFRONS Cockerell 1905

It now appears that *D. skinneri* Ckll., 1909, is not separable.

TETRALONIA CORDLEYI POSTICA (Cockerell 1914)

Described as a species; seems better placed as a subspecies of *T. cordleyi* Viereck, 1905.

XENOGLOSSODES DAVIDSONI (Cockerell, 1905)

Described under *Xenoglossa*, from the female. *Synhalonia hirsutior* Ckll., 1905, is the male. The male has the flagellum very long, entirely black; clypeus with a very broad pale yellow band; face covered with long hair; labrum with very long pale

hair; mandibles all black; mesothorax with long red hair; basal nervure falls a little short of nervulus; abdomen with erect gray hair, longer and more fulvous basally; fifth tergite with a rather broad pale gray band of hair; apical plate parallel-sided and rounded at end; covered with pale fulvous hair. The maxillary palpi are five-jointed. The male was taken by Timberlake at flowers of *Convolvulus occidentalis*, Puente Hills, near Whittier. The species appears to be very rare.

EPEOLUS GABRIELIS (Cockerell, 1910)

Described under *Triepeolus*. *Epeolus geminatus* Cockerell and Sandhouse, 1924, is the same.

HALICTUS MELILOTI Cockerell 1895

H. catalinensis Cockerell, 1903, is merely a large-headed form of this species.

MEGACHILE DAVIDSONI Cockerell 1902

M. occidentalis var. *leucotricha* Cockerell, 1902, is the male of this species. I took *M. davidsoni* at Mountain Home Creek, San Bernardino Mts., June 17. As Timberlake pointed out, it is oligotropic on *Dicentra chrysantha*.

COLLETES TUCSONENSIS Cockerell, 1906

Described from Arizona. Timberlake takes it at Riverside California. The genitalia of the type were compared.

The following records relate to captures made in 1934, but I have only studied a small part of the material obtained:

Stelis carnifex Cockerell. Mountain Home Creek, at flowers of *Rhamnus californicus*, June 17 (Ckll.). Timberlake has one taken at Riverside, April 22, at *Coreopsis lanceolata*.

Triepiolus timberlakei Cockerell. Riverside, June 16 (Philip Timberlake). At flowers of *Lippia*.

Megachile perhirta Cockerell. Riverside, male at flowers of *Lippia*, June 16 (*Philip Timberlake*).

Ceratina punctigera (Cockerell). One at flowers of *Cirsium*, near Idyllwild, June 24 (Ckll.).

Agapostemon californicus Crawford, Mountain Home Creek, San Bernardino Mts., June 17 (Ckll.).

Agapostemon femoratus Crawford. Males at Riverside. June 16 (Philip Timberlake and Ckll.).

AN ANOMALOUS NEW SPECIES OF MOTH FROM CALIFORNIA (LEP., PHALAENIDÆ, APATELINÆ)

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Identification of material submitted by Mr. H. H. Keifer for the State of California Department of Agriculture necessitated description of one new species with notes on related genera and species.

Apamea keiferi Benjamin, n. sp.

Male antenna ciliate and fasciculate, the joints marked. Prothorax with a small keel-like crest, metathorax with a spreading bifurcate crest, abdomen with a dorsal series of small crests. Tibiæ unarmed in one specimen, armed with a single spine between the spurs on each hind tibia in two specimens. Head, entire thorax, and fore wing cream yellow; the latter with the markings practically obsolete except for a few orange-colored scales obscurely indicating the reniform; fringe nearly concolorous, tinged with some purplish, obscurely interlined. Hind wing creamy white but largely appearing fuscous because of a suffusion over the entire wing excepting the costal and inner margins. Beneath pale cream color, the inner margins of all wings inconspicuously paler than the discs; fringes nearly concolorous, on the fore wing slightly tinted with purplish. Expanse: ♂ 34 mm.

Type localities and number and sexes of types: Holotype ♂ and 1 ♂ paratype, Cedarville, Modoc County, Calif., IX, 14, '33, M. L. Jones, collector; 1 ♂ paratype, Eagleville, Modoc County, Calif., Sept., 1925, J. Maillard, collector.

Types in U. S. National Museum, excepting one paratype returned to H. H. Keifer. Cat. No. 50661 U. S. N. M.

Notes: The present species is so similar in superficial appearance to pale and nearly immaculate specimens of *Protagrotis obscura* B. & McD., of which there is a long series in the National Collection, also from Modoc County, Calif., that the two species may easily be confused. *P. obscura* has the male antenna slightly serrate, and the male genitalia distinctly protruding. The new species has a beaded and fasciculated male antenna, and the male genitalia retracted, the result being that its male resembles the female of *obscura.*

Corresponding with the habitus, the holotype and one para-

type would fit into the genus *Protagrotis* under most existing classifications because of the possession of a single spine on each hind tibia. The other male paratype would have to be placed in the genus *Apamea* Ochsenheimer [in the sense of type *Phalæna (Noctua) chrysographa* D. & S.], as no trace of spines or spine sockets can be found on the tibiæ.

The writer is describing the anomalous new species in the latter genus (rather than in *Protagrotis*) because the male genitalia show a very close relationship to those of the genotype of *Apamea* as well as to the whole of the *nictitans* group of that genus. These insects, in common, each possess a large triangular projection from the base of the harpe (the clavus) plus an almost triangular and well defined cucullus which is produced without a conspicuous narrowing of the harpe. The latter character, the peculiar distal portion of the harpe, with the cucullus appearing almost as if superimposed, defines a group of several intimately related genera the larvae of which are borers; i. e., *Apamea, Hydroecia, Papaipema,* and allies; yet does not occur in the adults of many other borers, and is unknown elsewhere.

On the other hand, *Protagrotis obscura*, which *Apamea keiferi* so closely resembles, and with which it would be associated by many workers, has genitalia of the same general pattern as those of the *Agroperina* group of the Apatelinæ. The character of a single spine between the spurs of each hind tibia is obviosuly one which is sporadic in the Apatelinæ instead of being indicative of the subfamily Phalæninæ (=Agrotinæ). McDunnough (1928, Bul. 55, Nat. Mus. Can., p. 17) has already pointed out that *Protagrotis* "is essentially non-Agrotid and is better placed near *Luperina* and *Sidemia*." Furthermore, many examples of *Sidemia devastator* Brace (Apatelinæ) have a single spine on each hind tibia. Benjamin (1933, Pan-Pac Ent., 9:149) has discussed the presence or absence of spines in *Oligia minuscula* Morrison (Apatelinæ). In the last two mentioned instances the character of the presence or absence of spines does not assume specific significance.

The writer considers the above digression essential in order to illustrate his contention that the possession of a single spine on each hind tibia is of little significance and that this character should not be used to separate *Apamea keiferi* from the *nictitans* (typical) group of *Apamea*.

THE TERMINOLOGY OF THE MALE GENITALIA OF THE NOCTUIDÆ

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The terminology used to describe the male genital armature of the Noctuidæ is involved and does not apply in all cases to other families of Lepidoptera. With this in mind is it considered valuable to present in this paper the more important structures of the male genitalia that are used in the taxonomy of this group.

In the past there has been a great deal of confusion connected with the terminology of these organs. Pierce (1909) used names for his structures that did not conform in all cases with those of older workers, and where necessary invented new names. McDunnough (1911) set up a standard of priority for the nomenclature in question. Present workers as Busck and Heinrich in their work on North American Lepidoptera are inclined to follow Pierce. In 1914, Pierce changed a few of his names to conform to McDunnough's suggestions.

For purposes of this paper it has been deemed best to follow priority, that is, where an investigator has used a suitable name for a structure. The name applied to the various parts of the valves are after Pierce (1909).

A. The External Genitalia.

I. The tenth segment.

Uncus (L.uncus, a drag-hook), Gosse, 1883.

The uncus is the dorsal projection of the tenth segment and together with the socii forms the armature of the anus. It is usually seen as a projection, hook-like in nature, above the anus, but may be modified to assume various shapes. In the Noctuidæ it is usually well developed.

Socii (L.socii, a companion), Pierce, 1914.

The socii are a pair of hairy pads at the base of the uncus, one found on either side. They are not found in the Noctuidæ.

Side Lobe, Buchanan White, 1878.

This term refers to a structure located on each side of the tegumen near its apex, and is very variable in different groups. It is a conspicuous organ in the Papilionidæ.

Gnathos (Gr. gnathos, the lower jaw), Pierce, 1914; = subscaphium, Pierce, 1909.

The gnathos is a paired organ and when developed in its

entirety consists of two lateral arms and a ventral plate. It lies ventral to the anus near the base of the uncus and below the socii, if the latter are present. It is subject to great variation, and the ventral plate may be reduced or absent. The *scaphium*, as used in the Papilios by Gosse (1883) according to Pierce (1914) has no connection with the gnathos, but Eyer (1924) and others are wrong in considering it synonymous with the gnathos of Pierce.

Scaphium (Gr. skaphe, a boat), Gosse, 1883.

The scaphium as used by Gosse referred to "the mass of shining white tissue apparently in organic union with the lower surface of the uncus near its origin." As has been pointed out by Chapman (1911) and Mehta (1933), the scaphium is not sub-anal, but supra-anal and is not synonymous with the sub-anal gnathos of Pierce (1909). A supra-anal process in certain Noctuidæ, especially in the Catocalinæ has been confused with the scaphium of Gosse, whereas in reality the former is but a chitinous shield usually attached to the dorsal surface of the anal tube. The term *subuncus* is used by some workers for this structure.

Anus.

The gnathos in the noctuids often forms a tube through which the anal tube passes. As shown by Zander (1903) and emphasized by McDunnough (1911), the anal opening passes between the uncus and the gnathos and does not pass ventral to the gnathos as stated by Pierce. Underlying the anal tube is often a plate or hook-like structure called the *subscaphium* by Pierce.

II. The ninth segment.

Tegumen (L. tegumen, a cover), Buchanan White, 1878.

The term tegumen was first applied to the entire ninth segment by Buchanan White, and was synonymous with the *upper organ* of Scudder and Burgess (1870). Present day workers restrict this term to apply to the dorsal, chitinized part of the ninth segment which articulates with the vinculum at its lower extremities, and from which the uncus, socii and gnathos arise. (Busck and Heinrich, 1921).

Peniculus (L. peniculus, a little tail or brush), Pierce, 1909.

The peniculus is a lobiform basal process, densely clothed with hair, situated on either side of the tegumen below the uncus.

Vinculum (L. a band), Pierce, 1909; = saccus, in part, Bethune Baker, 1891.

This is the ventral chitinized band representing the sternite of the ninth segment which articulates with the tegumen at its lateral margins. In 1891 Baker described the internal invagination of the vinculum as the *saccus*, but most workers apply the term vinculum to the entire structure, whether produced into a saccus or not.

Transtilla (L. transtilla, a small cross-beam), Pierce, 1914.

The transtilla is a cross-bar or band-like bridge connecting the valves at their inner costal edges. It is greatly modified in some families, and in the Noctuidæ is lacking entirely.

Valves (L. valva, a folding door), Burmeister, 1832; = harpe, Pierce, 1909.

The valves (valvæ) refer to the paired clasping organs which are hinged below the articulation of the tegumen, and basally articulate with the vinculum. Pierce refers to the valves in his work on the Noctuidæ as the harpes, a name already having been applied to another organ by Gosse (1883).

Pierce has given various names to the different organs connected with the valves. The distal part is the *cucullus* which is usually separated by a fold or groove from the rest of the valve. The basal portion is the *sacculus*, and there may be present from within the base of the sacculus a small, variously formed organ, the *clavus*. The term *furca* refers to a forked organ arising below the juxta. The central portion is called the *valvula*. The *costa* refers to the margin of the cucullus, and it may have a series of incurved spines to which the term *corona* is applied. The *anal angle* is the outer margin of the cucullus, and may have an *anal spine*. A thumb-like process on the outer margin of the valves is termed the *pollex*, and the *digitus* is a small, projecting papilla in the inner side of the cucullus. The central portion of the valves finds a complicated prehensile structure, the *harpe*, which is usually present, but can be reduced or absent. The harpe as used by Gosse (1883) referred in the Papilionidæ to the prehensile centrally located structure and can be applied in the Noctuidæ to the same structure. Pierce divides the harpe into the *clasper* and *ampulla;* the former referring to the outer projecting organ, and the latter to the organ arising from the inner side of the central area.

III. The eighth segment.

Rami, (L. ramus-i, a branch), Poljanec, 1902; = cerata Pierce, 1914.

The rami refer to the distal projections from the eighth abdominal sternite. They are usually asymmetrical.

Mappa (L. mappa, a napkin), Pierce, 1914.

The loose semicircular flaps covering the cerata and covered with long, narrow scales were called mappa by Pierce (1914).

IV. The seventh segment.

Coremata (Gr. corema, a brush), Pierce (1914).

This is an organ found on the seventh segment of the abdomen in the Geometridæ and consists of an extensile pouch or bag, clothed with hairs.

B. The internal genitalia.

Penis, Gosse, 1883; = vesica, in part, Pierce, 1914.

The penis as used by Pierce (1914) referred to the entire intromittent organ, consisting of a chitinous tube, the ædeagus, and a sleeve-like eversible membranous tube surrounding the ædeagus, the *manica*. Within the ædeagus lies the *ductus ejaculatorius*, the distal end of which is eversible and was called the *vesica* by Pierce.

Ringwall, Zander, 1903; = anellus and juxta, Pierce, 1909, 1914.

This structure as used by Zander referred rather indefinitely to the membrane surrounding the penis. It refers at the present time to the cone-like tube or a triangular plate basally supported by the vinculum and laterally by the valves, and serves as the supporting structure for the ædeagus. It is synonymous with Pierce's *anellus* and *juxta*. The anellus may be extended into lateral processes, the *anellus lobes*, as in certain Pyralidæ, or it may be united to form a single arm, the *calcar*, as in certain Geometridæ. The juxta of Pierce (1909) refers to a band-like sheath through which the penis is protruded, or in other words, it is the plate on the ventral surface of the anellus. The juxta may be decorated on either side by a pad covered with hairs and scales and called the *cristæ* (Pierce).

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Acmæodera hepburni var. latiflava Fall

An interesting record of this Buprestid was obtained by Prof. E. O. Essig and Dr. J. F. Lamiman from two year old flower stalks of *Yucca mohavensis* Sargent. The yucca was collected at the mouth of Big Tejunga Canyon northwest of San Fernando, California, February 26, 1935. A single specimen was obtained when the yucca was cut into pinning blocks. Quite a number of the stalks showed the larval galleries and one other specimen was destroyed by the saw.—J. C. Lindahl.

THE NEARCTIC SPECIES OF ADOXOMYIA (DIPTERA, STRATIOMYIDÆ)

BY MAURICE T. JAMES

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Species of *Adoxomyia* Kert., though appearing but rarely in most collections, seem to be more abundant in the Southwest. For the loan of specimens used in the preparation of the following review, I am indebted to Dr. R. H. Beamer and his associates at the University of Kansas; also to Dr. R. H. Painter, and Dr. H. J. Reinhart, for the loan of material collected in this region.

The following table will separate the species known from the Nearctic region.

Key to Adoxomyia Kert.

1. Legs, including tarsi, wholly black 2
—. Tarsi pale, in contrast with the black tibiæ 4
2. Third antennal segment black ..... *rustica* O.S.
—. Third antennal segment reddish-yellow, at least on the basal annuli 3
3. Wings uniformly hyaline; pile of dorsum of thorax, in male, erect ..... *claripennis*, n. sp.
—. Wings semi-hyaline, but clouded in the basal cells; pile of dorsum appressed in both sexes ..... *appressa*, n. sp.
4. Pile of thoracic dorsum erect and wholly pale; that of scutellum pale ..... *argentata* Will.
—. Pile of thoracic dorsum appressed; or, if erect, there is considerable black pile 5
5. Antennal style short and thick, one-fourth to one-third the length of the segment ..... *lata* Lw.
—. Antennal style three-fourths the length of the segment 6
6. Wings slightly and uniformly infuscated ..... *texana*, n. sp.
—. Wings clouded in the region of the first and second posterior cells ..... *subulata* Lw.

Adoxomyia rustica O. S.

California (Recorded by Aldrich). Idaho: Moscow (Minn. U. and Colo. State College Collections). Washington: Cle Elum, May 1, 1932 (J. Wilcox) and Ellenburg, May 8, 1932 (Baker).

Adoxomyia claripennis James, n. sp.

Male. Body wholly black in ground color. Pile of eyes dense, black; that of head otherwise white. Third antennal segment red, except for style, which is black; style about half the length

of the segment. Thorax and scutellum with abundant white, erect, pile, and, dorsally, with appressed yellow tomentum; a few black hairs intermingled with the white. Legs wholly black; white- to yellow-pilose. Wings hyaline; veins brown; venation normal. Abdomen with abundant erect to semi-appressed whitish pile; the anterior segments medially and the posterior ones basally and medially with considerable short, appressed, black pile. Length, 9 mm.

Holotype: male, Mustang Mts., Ariz., May 13, 1933 (R. H. Beamer); in the Snow Entomological Collection, Kansas Univ.

Adoxomyia appressa James, n. sp.

Male. Body entirely black. Antennæ black, the third segment but slightly thicker than the second; five-annulated, with a two-annulated style, red on the basal three annuli, the style about half as long as the segment. Pile of eyes dense, black; that of face chiefly black, with some white pile at the base of the antennæ and on the cheeks; pile of frontal triangle white, that of ocellar triangle black. Proboscis short, retractile; labellæ red. Thorax, scutellum, and abdomen clothed densely with white, appressed pile. Legs wholly black, the tarsi yellow-pilose, otherwise white-pilose. Wings clouded with gray, tending toward brownish in the basal and discal cells; veins black, venation normal. Length, 8—9 mm.

Female. Similar to the male. Eyes separated; occipital orbits well-defined. Pile of the head denser, appressed, and wholly pale; that of the eyes shorter. Third antennal segment thicker, being definitely thicker than the second. Differs otherwise only sexually.

Holotype, male, Cloudcroft, N. M., June 28, 1932 (R. H. Beamer); in the Snow Entomological Collection; allotopotype, female, same data; paratopotypes, nine males, two females, same data.

Adoxomyia argentata Williston

Type, in the Snow Entomological Collection, labelled "Calif."

Adoxomyia lata Loew

Type from California; recorded from Washington by Williston.

Adoxomyia texana James, n. sp.

Male. Head black; eyes mostly black-pilose; face with a considerable amount of bushy white pile, interspersed with a little black pile. Second segment and three basal annuli of third antennal segment red; antennæ otherwise black; style long and

tapering, fully as long as the remainder of the third segment, and ending in a bristle. Third segment barely broader than the second. Thorax black, with some semi-appressed white pile on the sternum; dorsum with two longitudinal stripes of appressed yellow pile; pile otherwise erect and for the most part black, except along the dorsal stripes where it is concolorous with the appressed pile. Scutellum black; pile as on the dorsum; no appressed pile; spines yellow. Tarsi yellow; apical two or three tarsomeres somewhat darkened; extreme apices of the femora and bases of the tibiæ yellow; legs otherwise black. Wings rather uniformly clouded, slightly lighter toward the costal margin; stigma well-developed; veins brown. Abdomen black with black erect or semi-erect pile basally, and considerable white or silvery pile apically and ventrally. Length 7—9 mm.

Female. Differs from the male as follows: Third antennal segment much thicker, being at least twice as thick as the second. Pile of the entire body chiefly pale and appressed.

Holotype, male, Brazos Co., Texas, May 27, 1922, No. 3147. Texas State College Collection. Allotype, female, College Station, Texas, June 4, 1923 (H. J. Reinhard).

Paratypes, two males; College Station, Texas, June 4, 12, 1923 (H. J. Reinhard); two females, Brownwood, Texas, June 24, 1921 (R. H. Painter); one male, Fayetteville, Ark., July 13, 1906; two males, Flint, Okla., June 17, 28, 1933 (J. Stankovitch); one male, one female, Wilburton, Okla., June 9, 1934 (A. E. Pritchard).

Adoxomyia subulata Loew

Virginia: Type. Pennsylvania: Philadelphia, June 22, 1893. Indiana: Lafayette, June 22, 1922 (E. W. Stafford).

Distributional Notes on Some California Elateridæ

Meristhus cristatus Horn. A series of about forty specimens of this rarely captured species was taken by Mr. M. A. Cazier from a flume at Holtville, California, in July, 1934.

Limonius ulkei Horn. A single example of the rare *L. ulkei* was collected at Tehachapi, California, on March 11, 1934, by Mr. Paul Allen.—Kenneth D. Sloop.

ON SOME CICINDELÆ FROM THE PACIFIC COAST OF MEXICO, THE WEST INDIES AND UNITED STATES

BY WALTHER HORN

Berlin-Dahlem, Germany

Cicindela arizonensis was described by its author as a race of his *C. viridisticta*, but in the Deutsche Ent. Zeitschrift, 1903, p. 182, I have stated that it should be accepted as a distinct species showing more than one constant difference. At that date I was familiar only with specimens from the south of Mexico belonging to the true *viridisticta* Bates, and from Arizona north of the Mexican border belonging to the true *arizonensis*.

Quite recently I have received through the kindness of Mr. P. J. Darlington of Cambridge, Massachusetts, four specimens of a new race from middle Mexico which proves without doubt that the earlier opinion of Bates was right and that my interpretation was wrong. Below I give a description of the new race.

Cicindela viridisticta interjecta, new subsp.: Differt a *C. viridisticta* elytrorum margine laterali non glabro-nitidissimo sed solummodo levius sculpto perparumque micante; corpore toto supra subtusque plerumque virideriter aut coerulescenter induto.—Differt a subsp. *arizonensis* Bates elytrorum signatura reducta; macula laterali media minutissima, nullum hamulum intus et posticem versus emittente; lunula apicali magis tenui; pedibus obscure metallicis. Long. 7-7.5 mm (sine labro).

4 ♀ prope Guadalajaram (Jalisco, Mexico) ex coll. F. C. Bowditch per J. F. McClendon, 3, XII, 1903, collectæ; 2 ♀ in Museo Cambridge, Mass., 2 ♀ in collectione autoris.

This new race from middle Mexico approaches the *arizonensis Bates* by the sculpture of the elytra, but differs from that in the reduced middle spot, as in *viridisticta*. The pubescence of the lateral border of the pronotum is just a little less dense than in the subspecies *arizonensis* but a little closer than in *C. viridisticta*. The pro-episterna and the border of the first abdominal segment show sometimes a few bristles, in this feature also being intermediate between the other two forms. Sometimes the apical lunula reaches only to the sutural spine. One of the four specimens shows a coppery surface, the others are greenish or bluish æneous.

II

Over thirty years ago I described in the Journal of the New York Ent. Soc., XI, 1903, p. 213, a new species of *Cicindela* under the name *C. schaefferi*, drawn from a single specimen which was given to me by the late Chas. Schaeffer of New York, with the doubtful locality "California". Recognizing that it could not be truly a North American species, I gave in the description "North Mexico" and later that of "North West Mexico" as the supposed locality. During the last five years I have received more specimens of the same species sent to me for determination from two American museums, St. Paul, Minnesota, and Cambridge, Massachusetts. All had the exact locality "Haiti" and all had been collected by Frazer. Thus the enigma of the locality of this species is now solved. The species belongs to the West Indian fauna and should be placed there in my group *cyaniventris-cardini.*

III

Cicindela alata Liljeblad, described in the Canadian Entomologist, LXIV, 1932, pp. 213, 214, is a synonym of *C. cursitans* Lec.

A Mexican Species New to the United States

(Scarabæidæ, Coleoptera)

Phyllophaga (*Lachnosterna*) *dentex Bates*

I have examined a large series of this rare species (hitherto known only by a few specimens from Mexico) taken in the Huachuca Mts. of Arizona (Carr Canyon) VII-5-24, by Mr. J. O. Martin. The majority of the specimens are in the collection of the California Academy of Sciences. The strongly distorted outer claw of the middle tarsi, shining castaneous color, erect pubescence of the upper surface, with longer hairs intermixed on the elytra, the acute angulation of each claw base making the claw appear tridentate, and the club of the ten-segmented antennæ (slightly longer than the funicle in the male) should enable one to readily place the species. Mr. H. E. Hinton has very kindly compared specimens with the types in the British Museum.—Lawrence W. Saylor.

NEW SPECIES OF NORTH AMERICAN HELICHUS

(DRYOPIDÆ, COLEOPTERA)

BY HOWARD E. HINTON

Berkeley, California

The species herein described belong to the *productus* Lec. group of the genus, that is, species having the apical ventral segment densely pubescent. Separation of the species in this genus is rather difficult on account of the great similarity in form and sculpture of the various members. However, examination of the male genitalia offers a rather reliable means of separating the species and in the future should be figured in connection with the description of new species. The figures were drawn with the aid of a camera lucida. The first four are magnified equally, and the fifth, E, is not as highly magnified.

HELICHUS PRODUCTUS Lec.

(Pl. 1, fig. A)

Le Conte, J. L., Proc. Acad. N. S. Phila., VI. p. 43, 1852

Examination of numerous specimens of this species from various localities in California shows that there is some variation in the degree of dilation of the apices of the lateral lobes of the male genitalia. The specimen figured was taken at Mokelumne Hill, Calaveras Co.

Helichus thoracicus Hinton, new species

(Pl. 1, fig. B)

Moderately elongate, subparallel, rather robust; moderately densely clothed above with short, recumbent brownish hairs; black, shining; antennæ dark-testaceous, tarsi piceous.

Head with a small, shallow impression on vertex, finely, densely punctate and with fine, moderately dense granules anteriorly.

Prothorax four-fifths as long as wide, evenly convex, sides slightly arcuate, sinuate before hind angles; disk moderately coarsely, moderately densely punctate, with much finer punctures intermixed throughout, base and sides finely, sparsely, irregularly granulate.

Elytral disk with the striæ shallowly impressed and coarsely, moderately closely punctate; intervals flat, finely, moderately sparsely punctate, outer intervals very finely, moderately densely

granulate; scutellum subovate, base broadly arcuate, finely, sparsely punctate.

Beneath minutely, moderately densely granulate and clothed throughout with short, recumbent, brownish hairs; apical ventral segment densely pubescent. Lateral lobes of male genitalia slender at apex; tegmen very wide, very broadly rounded at apex. Length 7-7.5 mm.; breadth, 3 mm.

The type, a male, in collection of the writer, and four paratypes were collected by R. L. Usinger and the writer at La Venta, Mexico, D. F., on July 18, 1933, at an elevation of about 8,000 feet. Four additional paratypes were collected at Pueblo, Mexico. Three paratypes are deposited in the collection of the U. S. National Museum and the remainder in the collection of the writer.

In three of the paratypes from Pueblo, the prothorax is slightly declivous before the base. Its much coarser prothoracic punctation will serve to readily separate it from *H. productus* Lec. The coarser punctation approaches that of *H. puncticollis* Sharp.

Helichus propinquus Hinton, new species

(Pl. 1, fig. C)

Moderately elongate, subparallel, rather robust; moderately densely clothed above with short, recumbent, brownish hairs; black, shining; antennæ dark testaceous, tarsi dark piceous.

Head slightly depressed on vertex, finely, densely punctate, anteriorly and at sides somewhat rugulosely punctate and sparsely, minutely granulate.

Prothorax about four-fifths as long as wide, evenly convex, sides arcuate, sinuate before hind angles; disk finely, densely punctate, with finer punctures intermixed throughout, sides and base finely, moderately sparsely granulate and extremely finely, densely punctate.

Elytral disk with the striæ shallowly impressed and moderately coarsely, closely punctuate; intervals flat, near suture sparsely, microscopically punctuate, elsewhere minutely, moderately densely granulate; scutellum subovate, base broadly arcuate, finely moderately densely punctuate.

Beneath minutely, moderately densely granulate and clothed throughout with short, dense, recumbent, pale hairs; apical ventral segment densely pubescent. Lateral lobes of male genitalia with the apices stout, somewhat triangular and slightly hooked; tegmen very slender and acute at apex. Length, 6.5-8.5 mm.; breadth, 2.8-3.8 mm.

The type (No. 3975, Mus. Calif. Acad. Sci., Ent.) and numerous paratypes were collected by J. R. Slevin at Sierra Laguna, Lower California, Mexico, on August 15, 1919. Seven paratypes are deposited in the collection of the writer, one in the collection of Professor P. N. Musgrave, and the remainder in the collection of the California Academy of Sciences. The writer is indebted to the California Academy of Sciences for the opportunity of studying this species.

From *H. thoracicus* Hntn. it differs in not having the coarse prothoracie punctation. *H. propinquus* is very close to *productus* Lec., but it may be separated from the latter by having the apex of the tegmen slender and acutely pointed instead of rather wide and broadly rounded. In *H. propinquus* the apices of the lateral lobes are very stout, somewhat triangular, and slightly hooked, whereas in *H. productus* Lec. they are, in the series before me, never as stout and never hooked.

Helichus musgravei Hinton, new species

(Pl. 1, fig. D)

Moderately elongate, subparallel, rather robust; clothed above with short, moderately dense, brownish hairs; black, shining; antennæ dark testaceous, tarsi piceous.

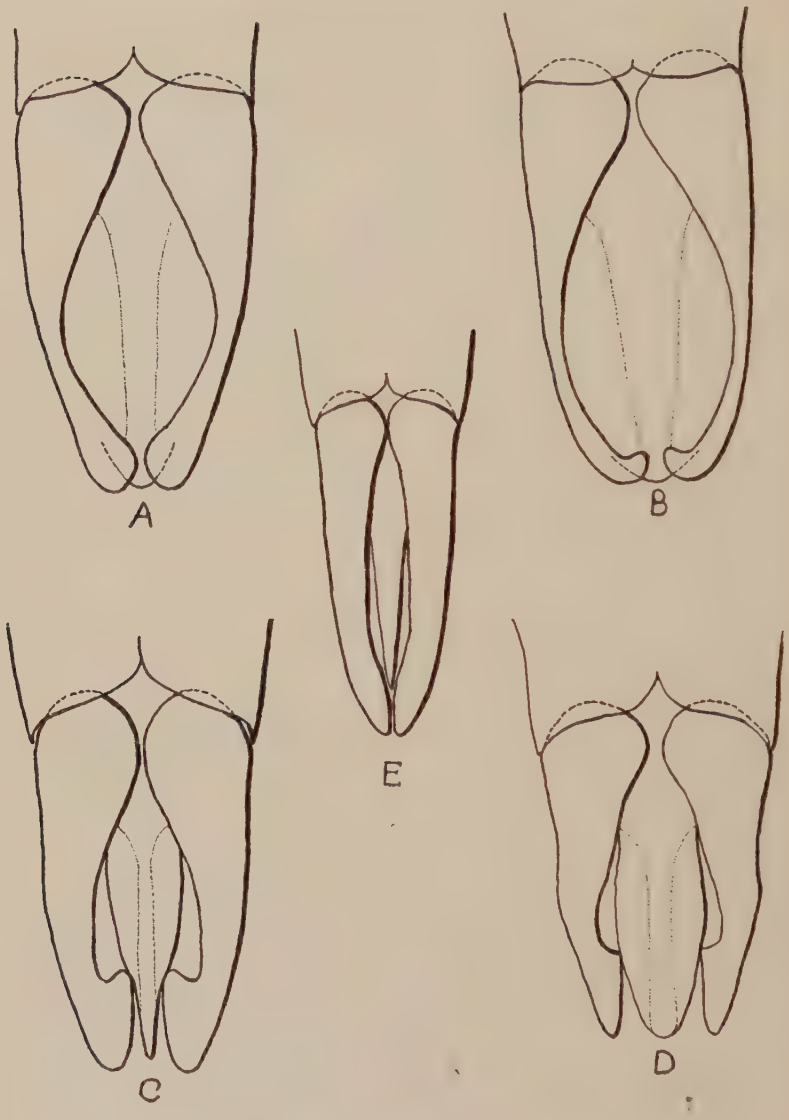
Head moderately finely, densely and confluently punctate.

Prothorax four-fifths as long as wide, evenly convex, sides moderately arcuate, sinuate before hind angles; disk moderately finely, densely punctate, with finer punctures intermixed throughout, more sparsely punctate anteriorly and finely, densely punctate at sides and base.

Elytral disk with the striæ coarsely and moderately closely punctate; intervals flat, near suture finely, moderately densely punctate, elsewhere minutely, moderately densely granulate; scutellum subovate, base broadly arcuate, finely, sparsely punctate.

Beneath moderately densely, minutely granulate and densely clothed throughout with short, recumbent, somewhat testaceous hairs; apical ventral segment densely pubescent. Lateral lobes of male genitalia with the apices slender, elongate and distinctly triangular. Length, 6.2 mm., breadth, 2.8 mm.

The type, a male deposited in the collection of the U. S. National Museum, and numerous paratypes were taken by R. L. Usinger and the writer at Real de Arriba, District of Temascaltepec, Mexico, in May, June, and July 1933, at an elevation of



A. Helichus productus Lec.
B. Helichus thoracicus Hntn.
C. Helichus propinquus Hntn.
D. Helichus musgravei Hntn.
E. Helichus confluentus Hntn.

6,000-7,000 feet. Additional paratypes were taken at Tejupilco, in June at an elevation of 4,000 feet. Paratypes are deposited in the collection of Professor P. N. Musgrave, for whom I take great pleasure in naming this species.

The punctation of the prothorax is somewhat coarser than that of *H. productus* Lec., but it is not as coarse as that of *H. thoracicus* Hntn. The apices of the lateral lobes are triangular but much more slender than those of *H. propinquus* Hntn.; and the apex of the tegmen is not slender and acute, but it is wide and broadly rounded as in *H. productus* Lec. and *H. thoracicus* Hntn.

Helichus confluentus Hinton, new species

(Pl. 1, fig. E)

Moderately elongate, subparallel, rather robust; moderately densely clothed above with short, recumbent, pale hairs; black, shining; antennæ dark testaceous, tarsi piceous.

Head slightly depressed on vertex, finely, densely punctate and minutely, sparsely granulate.

Prothorax four-fifths as long as wide, evenly convex, sides slightly arcuate, sinuate before hind angles; disk finely, rather densely punctate, with extremely fine, very dense punctures intermixed throughout, sides and base finely, moderately sparsely granulate and also punctate with extremely fine, dense punctures.

Elytral disk with the striæ shallowly impressed and coarsely, moderately closely punctate; intervals flat, near suture sparsely, minutely granulate, finely, irregularly and densely, microscopically punctate, elsewhere minutely, moderately densely granulate; scutellum subovate, base broadly arcuate, finely, sparsely punctate and sparsely granulate.

Beneath minutely, moderately densely granulate and clothed throughout with short, dense, recumbent, pale-testaceous hairs; apical ventral segment densely pubescent. Male genitalia flattened dorso-ventrally, lateral lobes rather straight, slender at apex; tegmen rather short, narrow and acutely pointed at apex. Length, 6.6 mm.; breadth, 3 mm.

The type (No. 3976, Mus. Calif. Acad. Sci., Ent.) and two paratypes were taken by E. G. Linsley at Cave Creek, Chiricahua Mts., Arizona, on July 3, 1932.

The flattened male genitalia will separate this from the species having the apical ventral segment densely pubescent. The structure of the male genitalia is intermediate in form between that of the *H. productus* Lec. and *H. lithophilus* Germ. groups of the genus.

CERAMBYCIDÆ FROM THE REVILLAGEGEDO ISLANDS, MEXICO

(Coleoptera)

BY E. GORTON LINSLEY

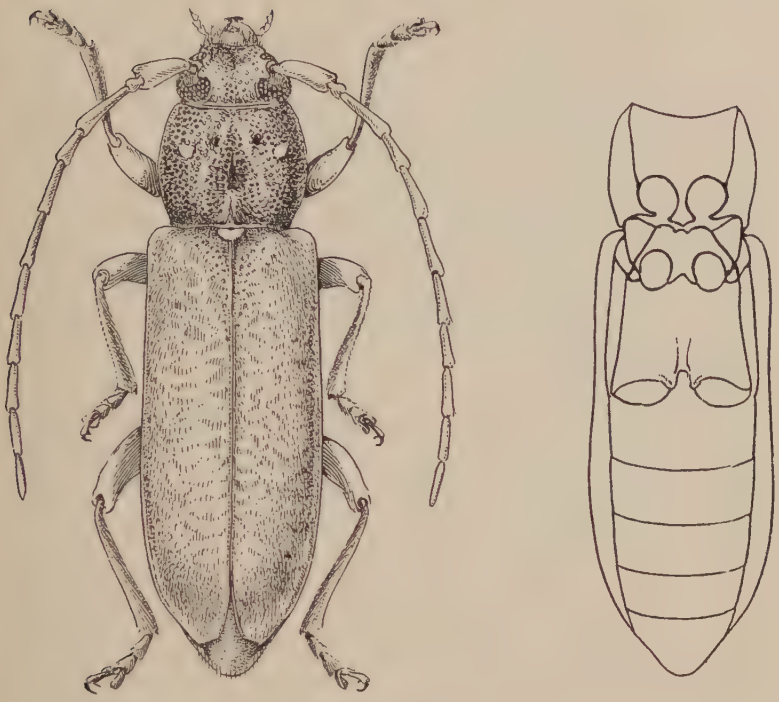
University of California, Berkeley

In May, 1925, an expedition of the California Academy of Sciences visited the Revillagegedo Islands. Among the Coleoptera taken at that time were two species of Cerambycidæ, one on Clarion Island, about four hundred miles from the mainland, and one on Socorro Island, about two hundred and fifty miles from the mainland. Since no longicorn beetles have ever been recorded from this island group, they seem worthy of note. The writer is indebted to Mrs. F. M. Abernathy for the accompanying illustration.

Nesodes Linsley, new genus (Phoracanthini)

Short, robust, convex, irregularly clothed with recumbent, white pubescence. Head flat between the antennæ; antennal tubercles scarcely elevated; palpi unequal in length, last segment narrowly triangular; antennæ slightly longer than the body (♂), distinctly shorter than the body (♀), unarmed; scape stout, fourth segment shorter than third or fifth segments, segments five to eleven flattened, sulcate on their upper surface. Prothorax stout, sides feebly to strongly rounded; width subequal to length or slightly transverse; disk with a median, polished vitta. Scutellum transverse. Elytra slightly less than two and one-half times as long as broad, sides feebly rounded; apices a little dehiscent, separately rounded; hind wings rudimentary, only about two-thirds as long as abdomen. Legs short; femora stout, not attaining the apex of the elytra in either sex; tibiæ carinate at base; tarsi short, broad, first segment of posterior pair scarcely longer than second segment. Prosternum narrow between the coxæ; anterior coxal cavities closed externally. Mesosternum broad between the coxæ; intermediate coxal cavities open externally.

Genotype: *Nesodes insularis* n. sp.



NESODES INSULARIS *Linsley*

This genus exhibits a very marked degeneration from the typical *Elaphidion-Anoplium* type to which it seems most closely related. This degeneration is due, no doubt, to modification for an insular existence. It may be distinguished from all other genera of the Phoracanthini by the robust, obtuse form, very large prothorax, short and somewhat rounded elytra which expose the apex of the abdomen in both sexes, greatly reduced hind wings which are useless for flight, and by the complete absence of any spines on the antennæ, elytral apices, or femora. The tibiæ are carinate near the base and the outer antennal segments are distinctly flattened.

Nesodes bears a distinct superficial resemblance to *Cacophrissus* Bates (Hesperophanini), but differs in the widely open intermediate coxal cavities, the shorter and heavier femora which do not attain the apex of the elytra in either sex, the smooth, median, pronotal vitta, and antennal structure.

Nesodes insularis Linsley, new species

Dark brown, irregularly clothed with recumbent, white hairs. Head coarsely punctured, pubescence sparse on front, condensed into a dense white patch at the base of the antennæ; antennæ more finely and closely punctured than the head, densely pubescent, with scattered erect setæ along the inner side of the second and third segments. Prothorax densely punctured except for median smooth vitta, with coarse and fine punctures intermixed; pubescence condensed into irregular white patches. Scutellum densely pubescent. Elytra coarsely but not closely punctured, densely clothed with white, recumbent pubescence. Pygidium finely, sparsely punctured, clothed with long, suberect hairs. Legs and ventral surface finely, closely punctured, densely, finely pubescent. Length, 11-18 mm.; breadth 3.3-5.3 mm.

Holotype male (No. 3977, C.A.S.Ent.), allotype female (No. 3978, C.A.S.Ent.), and ten paratypes, taken on Clarion Island, May 1, 1925, by Mr. H. H. Keifer. One pair of paratypes is deposited in the collection of the writer, the remainder in the collection of the California Academy of Sciences.

In style of markings and arrangement of pubescence this species resembles *Anoplium inerme* Newman more closely than any other longicorn known to the writer, but it may be readily distinguished from that species by the generic characters.

Mr. Keifer informs me that he took the type series of *N. insularis* on the south side of the island, where it was found on the lower levels boring in the pith of living leguminous shrubs, *Sophria tomentosa* Linn[1]. He also found three examples in a loaf of bread on a morning after having spent the night on the island.

Acanthoderes peninsularis Horn

A series of this well-known Lower Californian and Mexican species was reared from *Hippomane mancinella* Linn. on Socorro Island, by Mr. Keifer. The specimens differ slightly in color from the typical forms, but otherwise are conspecific.

Dectes spinosus Say

Mr. K. D. Sloop has recently submitted to the writer examples of *D. spinosus* from Glendale, Calif. This species has been previously recorded from as far west as Arizona, but this is apparently the first California record.—E. Gorton Linsley.

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[1] Johnston, 1931, Proc. Calif. Acad. Sci. Ser. 4, XX, p. 63.

REVISION OF THE GENUS MYCTERUS CLAIRV.[1]

(COLEOPTERA, PYTHIDAE)

BY RALPH HOPPING

Vernon, B. C.

For fifty-five years the American species of the genus *Mycterus* Clairv. have stood as Dr. Horn[2] left them in 1879 with four species. The American part of the genus of late years has been placed in the family *Melandryidæ* but in 1928 Mr. K. G. Blair[3] again placed it in the *Pythidæ* where it evidently belongs. close to the genus *Cariderus* Muls. (*Rhinosimus* Latr.)

A new species has been sent me by Mr. F. T. Scott from California and a few observations on the genus may be helpful.

Color: Although the color of the legs seems to be constant in the large series before me, to base the determination of the species on color alone, in a key, is often misleading without other characters, especially for the main divisions. In the species before me the color of the elytra seems to be always uniform in *scaber*, *canescens* and *elongata* n. sp. In *concolor* and *quadricollis* either piceous or testaceous, but in the former only the female may have elytra light-colored and in the latter it may be either sex.

Sexual characters: The several species present very good sexual characters. For instance the males of *canescens* have an oval or sometimes nearly round smooth area between the hind coxæ on the first visible abdominal segment, while the females have a median tumidity, sometimes almost a carina on the last ventral segment. The male intercoxal character in *concolor* is much larger, strongly elevated, strigulose, much wider posteriorly and pointed anteriorly and the female lacks the median tumidity of the female of *canescens*.

The sexes of both of the above species have the antennæ nearly alike, all subserrate. *M. scaber* and *quadricollis*, however, have the antennæ much modified in the males as compared with the subserrate antennæ of the females, the male of *scaber* also having a small tubercle between the hind coxæ, which is lacking in the

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[1] Contribution from the Entomological Branch, Dept. of Agriculture, Ottawa.
[2] Trans. Am. Ent. Soc., VII, October, 1879, p. 336.
[3] Junk Col. Cat., No. 99, 1928.

males of *quadricollis* but is replaced by a brown pubescent area, medianly placed, on each of the four ventral segments.

Specimens in collections seem to run largely to females. Of 96 *canescens* before me 26 are males and 70 females, of 80 *concolor*, 7 are males and 73 females, of *scaber* 2 are males and 11 females, while the 22 *quadricollis* are nearly equal in the sexes, 12 males and 10 females. The dates of collection probably explain this inequality as collections made in May and June contain about an equal number of both sexes, while the specimens collected in July and August are largely females. For instance of 47 specimens of *concolor* collected in the latter part of July in British Columbia only one was a male, while in the 22 specimens of *quadricollis* collected before June 15th the number of males and females is nearly equal.

The following key, while using the color of the legs as secondary characters, endeavors to separate the species by characters other than color. Unfortunately no males have yet been seen of the new species *elongata*.

KEY TO THE SPECIES

A. Pronotum elongate, wider at base than at apex.
  B. Vestiture canescent or silvery with elytral punctures with stiff white bristles, fore and middle legs flavous, hind legs more or less piceous.....1. *canescens* Horn.
  BB. Vestiture sparse, generally inconspicuous with all three pairs of legs the same color.
    C. Third segment of the antennæ not much longer than the fourth, form elongate with parallel sides to the elytra.....2. *elongata* n. sp.
    CC. Third segment of the antennæ twice as long as fourth, form comparatively short, sides of elytra more or less rounded and generally slightly wider toward apex.
      D. Antennæ of both sexes subserrate, legs piceous, Western species .....3. *concolor* Lec.
      DD. Antennæ of male with segments laterally produced, female subserrate, legs flavous, Eastern species.....4. *scaber* Hald.
AA. Pronotum quadrate, not wider at base than at apex, distal segments of antennæ in male laterally produced, female subserrate.....5. *quadricollis* Horn.

1. MYCTERUS CANESCENS Horn

1879, Trans. Amer. Ent. Soc., VII, p. 337.

Length, male 3-4 mm.; female 3-6 mm. Piceous with antennæ, clypeus and fore and middle legs flavous, hind legs piceous; ves-

titure silvery, the punctures of the elytra each having a stiff white hair.

Males are generally smaller than females and have between the hind coxæ a round or slightly elliptical, raised, denuded spot which is very finely punctate, the last ventral segment not reflexed at the margin. Females vary tremendously in size, some of them being as small as the smallest males; the last ventral segment is also not reflexed on the margin, and has a median tumidity, sometimes becoming a short carina, by which the females can always be told from *concolor*.

The 96 specimens, 26 males and 70 females, before me, are from all parts of California and southern Oregon. Like *concolor* it is often found on flowers of *Ceanothus*.

2. Mycterus elongata Hopping, n. sp.

Length, female 7 mm. Piceous with legs, antennæ, head, pronotum and basal margin of elytra dark rufous. Sides of elytra parallel and form elongate. Head below the eyes with margins scarcely elevated; antennæ slender, subserrate, with the third segment very little longer than the fourth, front of head densely punctured; pronotum wider at base than at apex and as densely punctured as the head; elytra with faint indications of carinæ on the disc, punctures irregularly placed, rather wide apart and shallow, becoming somewhat denser toward apex, sides rather abrupt, the lateral margins feeble; last ventral segment without median tubercle, convex, with margin not distinctly reflexed.

Holotype, female, No. 3863 in the Canadian National Collection, bears the label "Sequoia Nat. Park, Cal. 6-1930. F. T. Scott, Collector." Three paratypes, females, two bearing the label "Kaweah 7-9-33" and one "Sequoia Nat. Park, Cal. 6-1933" are in the collections of Mr. F. T. Scott of Visalia, Calif., of Mr. Roy Wagner of Fresno, Calif. and in that of the author. Kaweah, Calif., is just outside of the Sequoia National Park in Tulare Co., California.

This species differs from all the other known species of America north of Mexico in its convex elongate form and parallel sides of the elytra as well as in color.

3. Mycterus concolor Lec.

1853, Proc. Acad. Nat. Sci. Phila., p. 235.

Length, male 3.5-5 mm. Female, 4-7 mm. In a large series of this species the males are entirely piceous but the females may

be piceous or with flavous elytra. Dr. Horn suppressed his var. *flavipennis* as only occasional females have the flavous or brownish elytra. The males have between the hind coxæ an abruptly raised shining process or umbone, wide at the base and pointed at the apex between the coxæ. The females have the margin of the last ventral segment strongly reflexed without a median tubercle or carina.

7 males, 37 females, examined from California, Oregon and British Columbia. Dr. Horn gives Colorado, New Mexico, and Nevada while the Leng list gives New Mexico and Southern California. It is probably found from the Rockies westward, often on species of flowering *Ceanothus*.

4. MYCTERUS SCABER Hald.

1843, Proc. Acad. Nat. Sci., Phila. p. 308.

Length male 3.5-4.5 mm., female 3.5-5.5 mm. Besides being an Eastern species, the males can always be told from those of *concolor* by the transverse segments 3 to 11 of the antennæ in *scaber*, these in *concolor* being subserrate. The females strongly resemble each other but differ in the last ventral segment, which is small and barely if at all reflexed on the margin in *scaber* but broadly and strongly reflexed in *concolor*. The male of *scaber* has only a small tubercle between the hind coxæ. Only ten specimens are before me, 2 males and 7 females, from Massachusetts and Virginia but it is said to occur all along the Atlantic Coast.

5. MYCTERUS QUADRICOLLIS Horn.

1874, Trans. Am. Ent. Soc. V, p. 42.

Length male 5-6 mm., female 5-6.5 mm. Besides having the pronotum as wide as long with vague impressions, this species has the front of the head before the eyes, antennæ, legs and margin of the last ventral segment flavous. The elytra in both sexes are either black or flavous and shining. The males have the antennal segments 4-10, much wider than long, and the females segments 4-10 approximately as wide as long. The last ventral segment in the male is broadly expanded, but in the female it is small, abrupt, without expanded margins and almost diamond-shaped. Ventral segments 1-4 with a median patch of brownish pubescence in the male. It is generally found in the deserts of the southwest on the blossoms of *Yucca arborescens* Torr.

TWO DESCRIBED SPECIES OF TRICHOGRAMMA VALIDATED

BY STANLEY E. FLANDERS

Citrus Experiment Station, Riverside, Calif.

Recent investigations by various workers have shown that at least two species of *Trichogramma* that have been synonymized with *T. evanescens* Westw. have decidedly distinct characteristics and should be re-established as separate species. *T. embryophagus* (Hartig) and *T. semblidis* (Aur.) appear very distinct from the type species of the genus, *T. evanescens.*

When these three forms are subjected to temperatures above 77° F, at least during the "prepupa" stage of development, the color of the females of each form is strikingly distinct from that of the others. At warm summer temperatures, therefore *Trichogramma embryophagus* is clear yellow, *T. evanescens* is orange-yellow with fuscous markings, at least on the dorsum of the abdomen, and *T. semblidis* is dilute fuscous with no trace of yellow.

Van Steenburgh found that these color forms would not interbreed and that they differed in their responses to environmental conditions in the field. At a constant temperature of 80° F. he found that their life cycles were 8, 8¼, and 9 days, respectively.

The fact that two of these forms would not interbreed was first noted by Girault in 1911. *Trichogramma embryophagus* is reported as having thelyotokous and arrhenotokous races. The males of *T. semblidis* are commonly dimorphic.

Trichogramma minutum Riley may be considered as a synonym of *T. evanescens*, and *T. pretiosa* Riley a synonym of *T. embryophagus.*

Aurivillius, Chr.
1897. Entomologisk Tidskrift. 18:249-255.
Girault, A. A.
1911. Bull. Wis. Nat. Hist. Soc. 9:145-165.
1913. Revue russe d'Entomologie, 13:292-294.
Hartig, T.
1838. Jahresber. Fortschr. Forster. 1:250.
Perkins, R. C. L.
1912. Exp. Sta. H.S.P.A. Entom. Bul. 10:19.
Van Steenburgh, W. E.
1934. Can. Journ. Res. 10:287-314.

A NEW APHODIUS OF THE CADAVERINUS GROUP
(Coleoptera; Scarabaeidæ)

BY LAWRENCE W. SAYLOR

University of California, Berkeley

Aphodius dilaticollis Saylor, new sp.

Very robust, piceous, strongly shining. Head with front and base of clypeus densely very finely punctured, the former with about half a dozen much larger punctures in a group each side of the middle; clypeus strongly convergent anteriorly, apex shallowly broadly emarginate, angles broadly rounded, margins not reflexed, surface coarsely rugose, with a faint suggestion of a transverse ridge near apex; genæ subprominent, obtusely rounded. Prothorax much wider than elytra at base, only a little less wide behind than in front, hind angles broadly rounded, lateral margins evenly arcuate, hind margin with strong entire basal marginal line; disc with one type of puncturation only, the large coarse punctures almost lacking in anterior third, sparsely punctuate at middle, the punctures separated by from one to two or even four times their diameter, along the base and each side of middle with many punctures irregularly arranged and never closer than about once their diameter. Elytra oblong-oval, much smaller than thorax at base; humeral angles rounded, sides only slightly convergent towards the base; striæ finely punctured; intervals feebly convex, extremely finely evenly punctured over the entire area. Mesosternum carinate between the coxæ. Hind tibiæ with equal spinules at apex, first segment of hind tarsi as long as next three combined. Upper face of anterior tibiæ crenulate externally, surface impunctate; inner spur slightly thickened and curved inwards. Length 7.7 mm. Width 3.7 mm.

The unique type, in the author's collection, is from Yamhill County, Oregon, collected by E. S. Ross and by him presented to me.

Resembles *A. ovipennis* most closely as to size, but abundantly distinct by the rounded instead of dentate humeral angles, etc. This species is the largest of the *cadaverinus* group and keys to *A. cribratulus* in Horn's paper[1] and in Van Dyke's key[2], but is easily separated from this by the thorax not being narrowed behind while in the latter it is very much so, and in the former the thorax is much wider at base than the elytra instead of much narrower as in the latter. The striæ also are much less coarsely punctured in *dilaticollis*.

[1] Trans. Am. Ent. Soc., XIV, 1887, p. 28.
[2] Pan-Pac. Ent., IV, p. 153, 1928.

Julius Melzer (1878-1934)

The cause of entomology in South America has recently sustained a severe loss in the death on December 20, 1934, of Mr. Julius Melzer. Although Mr. Melzer was not very well known to the general entomologist in North America his work was familiar to all who worked with the Neotropical Coleopterous fauna. Born in Stolp, Pommern, Germany, on June 11, 1878[1], Julius Melzer went to Brazil in 1900 under contract with the firm of Herman Stoltz & Co. He soon became interested in insects and started the studies which later made him the greatest South American authority on the Cerambycidæ. One of his earliest papers was a monograph of the Prioninæ (1919). He first published in the Revista do Museu Paulista, later in the Archivos do Instituto Biologico de Sao Paulo, and more recently in the Revista de Entomologia. The list of his works is not long, about twenty papers, but these were all important contributions. Although in the employ of a large firm which demanded a great deal of his time, he found spare moments in which to describe some three hundred new species from the Neotropical fauna. His descriptions are clear and concise, his papers well illustrated, and all who worked with him found him very generous and helpful. Upon Mr. Melzer's death his collection was deposited in the Instituto de Biologia Vegetal in Rio de Janeiro, Brazil.—E. Gorton Linsley.

Correction of Errors in Preceding Number

Several errors in "make up" crept into the last number of the Pan-Pacific Entomologist (XI. No. 1) and were not detected in time for correction.

Page 8, line 8 from top. The foot note (4) will be found at bottom of page 182 of Vol. X and should have been repeated.

Page 13. Two foot notes should have been dropped to bottom of page.

Page 21, line 3 from bottom should have given the antennal segments as "first and second, and third and fourth".

Page 22, line 3 below cut of beetle should have been the second line above this cut.

Page 46. The name *Osmia rupestris* Ckll. should have been above line 6 from bottom, and should have been omitted from top of page 47. A corrected copy of this article goes to subscribers. —Editor.

[1] Data concerning Mr. Melzer's life was very kindly supplied by Dr. Thomaz Borgmeier who will publish a fuller notice in an early number of the Revista de Entomologia for 1935.

A NEW CALIFORNIA BUTTERFLY

BY THEO. W. HOWER

Euphydryas quino rubyæ Hower, new tr. f.

Having the malculation of the discal area of the wings of both upper and under sides fused through the interspaces similar to *Euphydras chalcedona* ab. *fusimacula*. Markings along outer margins normal. Bases black except for normal red markings. Classification: albifusism.

Holotype ♀ expanse 45 mm. Dana Point, Orange County, California, March 17, 1935, in author's collection. I take great pleasure in naming this beautiful tr. f. after my wife and co-worker. There has been much discussion among Lepidopterists as to whether the parent species of *rubyæ* should be called *E. quino* Behr or *E. editha* race *wrightii* Gunder. I do not wish to go into this question here but wish to state that *rubyæ* is referable to the *editha* group of Southern California butterflies whether they should be called *quino* as illustrated in Dr. Comstock's book, "Butterflies of California," or *wrightii* as described by Mr. Gunder in the Pan-Pacific Entomologist, Vol. VI, No. 1, July, 1929.

A New Locality Record for California

Several females of *Zelleria haimbachi* Busck, determined by Mr. August Busck of the U. S. National Museum, were reared from *Pinus ponderosa* terminals from July 30 to August 3, 1934, in material collected by Mr. R. L. Furniss in the Antelope Plantation, Lassen National Forest on July 25 of the same year. (Reared under Hopkins U. S. No. 21095b).

This is reported as probably being a new locality record by Mr. H. H. Keifer of the State Department of Agriculture. Dr. K. A. Salman of the Bureau of Entomology and Plant Quarantine reports this species as being abundant on other plot areas in the east side of Lassen and Plumas National Forests.

The larvæ web the needles together, and mine them near the base of the sheath, resulting in the complete cutting of the bundle. The needles do not fall, being held together by the webbing.

This defoliator is at present only of secondary importance in the above mentioned localities.—W. Harry Lange, Jr.

NEW SPECIES OF NORTH AMERICAN WEEVILS IN THE FAMILY CURCULIONIDÆ, SUBFAMILY BRACHYRHININAE, III

BY EDWIN C. VAN DYKE
University of California, Berkeley, California

Part 3, continued from p. 48

Tribe TROPIPHORINI (continued)

Genus MIMETES Schonherr

Mimetes Schonh., Mantissa Secunda Familiæ Curcul., 1847, pp. 23-24.
Mimetes Schonh., Lacord., Gen. Coleopt., VI, 1863, pp. 39-40.
Mimetes Schonh., Horn., Rhyn. N. Am., Proc. Am. Phil. Soc. XV, 1876, pp. 44-45
Mimetes Schonh., Pierce, Proc. U.S. Nat. Mus., XXXVII, 1909, p. 348
Stamoderes Csy., Anns. N.Y. Acad. Sci., IV, 1888, p. 237
Amotus Csy., Anns. N.Y. Acad. Sci., IV, 1888, p. 243
Amotus Csy., Pierce, Proc. U.S. Nat. Mus., XXXVII, 1909, p. 348

The genus *Mimetes* has greatly puzzled me during recent years and only recently I expressed the opinion that it would have to be removed to the tribe Epicærini[1]. After a restudy of the case, I have come to the conclusion that it had better remain in the tribe Tropiphorini for, although there are no well marked postocular prothoracic lobes, there are distinct fimbriæ where such lobes normally occur. The Epicærini are absolutely without these. I also now feel that Dr. George Horn was right in his determination of *Mimetes* and that both Casey and Pierce lacked a proper comprehension of the affair. There are no generic differences between *Stamoderes* Csy., and *Amotus* Csy., and both are synonyms of *Mimetes* Schn. It is a genus strictly limited to our Pacific Coast and dominant in California.

KEY TO SPECIES

1. Pile of elytra very short, depressed and not distinctly seen except on declivity 2
—. Pile of elytra moderately long, suberect and readily seen over entire area 3
2. Elytral intervals more or less convex at sides and alternate ones generally well elevated on declivity; head with marked transverse impression at base of rostrum; funicular segments somewhat elongate, the terminal at least as long as broad. S. W. Calif. ..... *setulosus* Schonh.

[1] New species of North American weevils in the Family Curculionidæ, etc., Pan-Pacific Ent., X, 1934, p. 182.

—. Elytral intervals much flattened, but slightly if at all convex at sides and apex; head but feebly transversely impressed at base of rostrum, the upper surface of head and rostrum on same plane; funicular segments more moniliform, outer two Evidently transverse. N. W. Calif.....*uniformis* (Csy.)

3. Larger species, 6-7 mm. long; elytral intervals feebly convex, declivity abrupt with sutural intervals not prominently elevated in a keel-like manner near apex; prothorax broadly arcuate at sides and much narrowed near apex Southern San Joaquin Valley, Calif.....*longipennis* Pierce

—. Smaller species, 4-6 mm. in length; elytral intervals always flattened, declivity arcuate and very oblique, with sutural intervals prominently elevated in keel-like manner near apex; prothorax subcylindrical and but moderately narrowed near apex 4

4. Elytra somewhat cordate, generally broad at humeri, the setæ coarse, moderately long and well spaced; prothorax rather suddenly though not greatly narrowed or constricted in front; head with evident transverse impression at base of rostrum. Antioch, Calif.....*seniculus* Horn

—. Elytra evenly elliptical, the setæ shorter, finer, closer together and more regular; prothorax gradually narrowed toward front; head with vague or shallow transverse impression at base of rostrum. Eastern Wash.....*lanei*, n. sp.

Mimetes setulosus Schonherr

This species, I am confident, was properly recognized by Horn (1876). It is very common at times and quite widely distributed throughout the territory from Ventura to San Diego County, California. It is normally found during the months of April and May on various hillside shrubs, but when these have been removed for purposes of cultivation, it may attack the orchard trees or crops planted in their place. Casey's *gracilior* and *longisternus* are synonyms. It is a more or less variable species as to size, coloration and structure as usual.

Mimetes uniformis Casey

The more characteristic specimens of this species of a uniform pearly gray color are quite easily recognized. They, however, are often dark brown with the sides of prothorax and elyttral suture gray as well as much of elytra also spotted with gray. Then they much resemble the following especially if the specimens be small. Both *seniculus* and *lanei* have rather long pile, hardly evident in *uniformis*. The former also generally has a gray vitta in the middle of prothorax and the elytra ovate rather

than elliptical. Small specimens of both *uniformis* and *seniculus* were sent on to Dr. P. J. Darlington Jr. and by him kindly compared with the Horn type of *seniculus* in the Cambridge Museum.

This species is very variable as to size and coloration, the females as a rule are much larger and lighter than the males. It is common in April and May on the willows and other shrubs along the sandy margins of the Russian River. More recently, A. D. Borden has found it destructive to the buds of apple trees at Sebastopol, California, and last year, April, 1934, Professor E. O. Essig and I found it abundant on all shrubs along the sandy bottom lands of both the VanDuzen and Eel river valleys in Humboldt County. It is no doubt widely distributed throughout northwestern California and common at the proper season, which is, however, a very short one.

Mimetes longipennis (Pierce)

A very distinct species. It is one of the larger species of the genus, somewhat resembling *setulosus*, but with a more rotund prothorax and rather long, suberect setæ. It seems to be confined to the southern part of the San Joaquin valley in California.

Mimetes seniculus Horn

Rather small, densely clothed with silvery gray, light and dark brown scales arranged in a tessellated manner, the gray scales dominating on head, in a median and lateral stripes on prothorax, along the suture and sides of elytra and beneath, and sparsely pilose. Head with front somewhat flattened, interocular space three times breadth of single eye; rostrum at least twice as long as broad, widened at base, separated above from head by a distinct transverse impression, feebly arcuate and with a smooth median line; scrobes deep, well arched and passing rapidly beneath; antennæ as usual in genus; eyes moderately prominent. Prothorax slightly broader than long, sides arcuate, narrowing forwards, feebly constricted before base and more broadly near apex, disk convex and sparsely setose. Elytra over a fourth longer than broad, at least twice as long as forebody and a third broader than prothorax; sides well rounded at humeri, almost parallel or feebly arcuate at middle, thence arcuate and later straight and convergent to apex; disk convex, evenly arcuate at apical declivity; striæ finely impressed and finely punctured; intervals flat except sutural which is somewhat elevated toward apex in the form of a blunt carina, and the fifth which is feebly convex behind, and setose; setæ short, well spaced, semi-erect and arranged

in a double row on the odd intervals and a single row on the even. Beneath more finely and densely pilose. Female, length 7 mm., breadth 3 mm; male, length 5.5 mm., breadth 2.25 mm.

All specimens I have seen were collected near Antioch, California, March 4, 1934, by M. Cazier, R. Kepner and F. R. Platt, to whom I am indebted for my series. They were all found feeding on a species of *Artemesia*. The species varies greatly as to size and coloration like *uniformis*, the males as a rule being smaller, narrower and with the afterbody more elliptical; the individual specimens may be more or less uniformly a silver gray or much maculated.

Of the described species, *longipennis* Pierce, is the only one with which it would be apt to be confused; *seniculus* is, however, much smaller than *longipennis*, proportionally less robust, the rostrum shorter and broader, particularly at base, the eyes wider apart, the scrobes more arcuate, the prothorax less broad and with sides less expanded, the elytra with the sutural intervals much more elevated apically and the setæ shorter, sparser and biseriately arranged at most on alternate intervals, whereas in *longipennis* they are biseriately disposed on all intervals.

Mimetes lanei Van Dyke, new species

This species is very similar to *seniculus* but slightly smaller on the average, generally more uniformly cinereous, with the base of the rostrum and interocular space less broad, the eyes much more flattened, the transverse impression at the base of the rostrum feebler, the scrobes less arcuate, directed towards lower angle of eye, the prothorax more cylindrical, and the elytral setæ shorter, more numerous and more regularly disposed.

Holotype (No. 3981, Mus. C.A.S., Ent.) and numerous designated paratypes from a series of fourteen specimens collected by M. C. Lane at the following localities: Ritzville, Wash., May 6, 1921 (type locality); Lind, Wash., May 5, 1921; and Pasco, Wash., March 18, 1926. I have also one specimen collected by F. W. Nunenmacher in Klamath Co., Oreg., May 16, 1913.

Tribe Promecopini

Tanymecus texanus Van Dyke, new species

Form oblong, rufopiceous, rather densely clothed with pearly scales and with numerous short, slightly bent, suberect setæ. Head

including rostrum about a fifth shorter than prothorax, front and base of rostrum somewhat coarsely, closely punctured, the short setæ arising from the punctures, rostrum broader than long and depressed at apex; the eyes prominent; scrobes deep, broad in front of eyes and narrowly continued beneath, the scape attaining margin of prothorax, first funicular segment at least twice as long as broad, second longer than broad, 3-7 transverse and gradually wider. Prothorax slightly longer than broad, base transverse, apex feebly arcuate and visibly narrower than base, sides moderately rounded; disk transversely convex but upper surface longitudinally straight and rather coarsely, closely cribrately punctured, the setæ arising from the punctures as on the head. Elytra oblong oval, humeri prominent but well rounded, sides arcuate and gradually narrowed from middle to apex; disk moderately convex, striæ feebly impressed and rather coarsely, closely punctured, intervals flat except at sides and apex and minutely irregularly punctured, the setæ arising from the punctures. Beneath with white scales concealing the somewhat coarse punctures, the abdominal scales also more elongate than elsewhere. Femora squamose and pilose, the tibiæ and tarsi merely pilose. Length 6 mm., breadth 2.5 mm.

Holotype (No. 3982, Mus. C.A.S., Ent.), a unique, collected at Uvalde, Texas, June 14, 1932, by J. O. Martin.

This species, the third to be described from this country, is of about the size of a small *Tanymecus confertus* Gyll., but agrees more closely with the larger *lacæna* Hbst. as regards its structure and superficial appearance. Its distinctive features are its somewhat rufous body color, its short rostrum, eyes more prominent than in either of the other species, shorter and more broadly rounded prothorax at sides, the longitudinally straight outline of upper surface as seen in profile, the coarse, close strial punctures and the conspicuous yet shorter setiferous as well as squamose vestiture of body.

Tribe Brachyrhinini

Genus Sciopithes Horn

This genus established by George Horn in 1876 and based upon the single species, *obscurus* Horn, has in recent years been found to contain a number of species and to be more widely distributed along the Pacific Coast than was at first thought. In 1888, Thomas L. Casey added five species to the genus but he failed to recognize Horn's original species. I have carefully

examined the types of all described species. Two of Casey's species, *arcuatus* and *setosus*, I consider valid species. Of the others, I feel quite certain that *significans* is an absolute synonym of *obscurus* Horn and believe that *brumalis* and *angustulus* are but slight variants of this widely spread and somewhat variable species. Certain of the antennal characters are capable of being used for the purpose of separating the species but absolute lengths can not be relied upon. In the wide ranging *obscurus*, the antennal segments vary to a considerable extent as regards length. Three new species are in my collection, which will be described in the following pages.

Key to Species

1. Species with dorsal setæ hardly elevated above the scaly vestiture, antennal scape slender and reaching beyond anterior border of prothorax.....2
—. Species with dorstal setæ, particularly of elytra, rather long, more or less hair-like, suberect, and extending well above scaly vestiture 3
2. Fifth, sixth and seventh funicular segments of antennæ from a third to almost twice as long as broad; prothorax cylindrical, breadth hardly greater than length, discal punctures deep and very distinct; elytra over one-fourth longer than broad and with distinct and contrasting color pattern.....*obscurus* Horn
—. Fifth, sixth and seventh funicular segments of antennæ moniliform, hardly longer than broad; prothorax fully one-sixth broader than long, pronotal punctures in great part concealed by scaly vestiture; elytra globose, less than one-fourth longer than broad and of rather uniform color, gray with a somewhat darker transverse band near declivity.....*arcuatus* Casey
3. Antennæ slender, scape extending well beyond anterior border of prothorax, outer funicular segments elongate, fully twice as long as wide; elytral setæ sparse and well spaced.....4
—. Antennæ robust, scape just reaching anterior border of prothorax or but slightly beyond, outer funicular segments moniliform and less than twice as long as broad; elytral setæ denser and more evident.....5
4. Dark, earthy colored; interocular space narrower than diameter of eyes; outer funicular segments about twice as long as wide, club about two and a half times as long as wide; prothorax barely wider than long; elytral setæ quite evident, though rather short, oblique and arcuate.....*intermedius* n. sp.
—. Rather light gray; interocular space broad, fully twice as wide as breadth of eyes; outer segments of funicle slightly

more than twice as wide as long, club about three times as long as broad; prothorax at least a fourth wider than long; elytral setæ erect, rather long and hair-like.....*insularis* n. sp.

5. Dark, earthy colored; outer funicular segments less than twice as long as broad, club about two and a half times as long as broad; prothorax one-fourth broader than long; setæ of prothorax short, of elytra long and erect.....*sordidus* n. sp.

—. Gray, maculated with brown; outer funicular segments hardly longer than broad, club about twice as long as broad; prothorax about as broad as long; setæ of prothorax rather long and erect, of elytra somewhat longer.....*setosus* Casey

Sciopithes obscurus Horn

This is a very common weevil during the months of April and May and is to be found feeding on the foliage of many of our undershrubs in the great forests which grow along the coast of the more northern parts of western North America. It ranges from British Columbia to Monterey Bay, California. The general color, due to the color of the scales, varies from gray through light brown to dark brown and the distinctive color pattern, produced by an irregular dark band separating off the darker dorsal area from the generally lighter sides and apex, is always more or less conspicuous. The funicular segments vary to a certain degree, the outer segments in the more northern specimens being in general more moniliform and shorter while those from farther south are more elongate. In general the sixth segment is shorter than the seventh but here and there, both north and south, specimens may be found having the two about equal in length. As a result of having studied great numbers of this species, both in collections and in the field, and noting the great amount of variability, I feel justified in reducing to synonymy the following species: *significans* Csy., *brumalis* Csy. and *angustulus* Csy.

Sciopithes arcuatus Casey

This species is quite well characterized, being of a more or less uniform light gray color, less elongate proportionally than the preceding and with proportionally broader prothorax. It appears to be found in more open country than is the case with the preceding. Our specimens were collected near Millbrae, San Mateo Co., Calif., Casey's unique from farther north in Mendocino Co., Calif.

Sciopithes intermedius Van Dyke, new species

Rather small, piceous with rufous antennæ and legs and body densely clothed with earthen colored, closely appressed scales, the prothorax with two broad dark discal bands and the elytra with an irregular band of same color separating the discal area from the sides and apex, the upper surface also furnished with a limited number of rather short (about one-half breadth of intervals in length), semierect and hooked setæ, most evident on the elytra. Head about equal in length to prothorax, narrow, interocular area less than width of eyes; eyes much flattened; scape extending almost to middle of prothorax, outer funicular segments about twice as long as wide, club about two and a half times as long as wide. Prothorax barely wider than long, sides rather evidently arcuate, therefore wider at middle; disk with a few widely separated punctures and short setæ arising from them. Elytra elliptical, narrowed at apex, less than twice as long as broad, striæ fine and finely punctured, intervals flat, each with a row of well spaced, semierect and hooked setæ projecting but a short distance above the scales. Beneath sparsely squamose and pilose. Length 6 mm., breadth 2.5 mm.

Holotype (No. 3983, Mus. C.A.S., Ent.) and one paratype, collected at Martinez, Contra Costa Co., Calif., the first in June, 1910, the second Oct. 8, 1911, both in my collection.

This is a much smaller, narrower and darker species than *obscurus*. Its most distinctive characters otherwise are the narrow head and the conspicuous though short elytral setæ, projecting well above the scales. The setæ though more evident than in *obscurus* are not as long as they are in the species which follow.

Sciopithes insularis Van Dyke, new species

Robust, moderate in size, black, clothed with closely appressed and slightly imbricated gray and light brown scales, the former dominating and the latter concentrated in two broad stripes on the pronotum, in an irregular band separating the disk of the elytra from the sides and apex, and in a wedge shaped patch on the declivity, the upper surface also furnished with semierect setæ, those of the elytra about three-fourths as long as the breadth of the elytral intervals. Head longer than prothorax, broad; interocular area greater than width of eyes, slightly narrowed in front; eyes much flattened; antennæ slender, scape extending well back of anterior margin of prothorax, outer funicular segments fully twice as long as wide, club fusiform, at least three times as long as wide. Prothorax nearly a third broader than long, sides feebly arcuate, disk with punctures concealed by scales and setæ

short, barely projecting above the scales. Elytra globose, but one-fourth longer than broad, finely striato-punctate, intervals broad and flat, each with an irregular row of well spaced, semierect white and brown setæ, sometimes doubled on declivity. Beneath with sparse vestiture. Length 5.5 mm., breadth 3 mm.

Holotype (No. 3984, Mus. C.A.S., Ent.) a unique in my collection, taken on San Clemente Island, Calif., June, 1907, and kindly given to me by Dr. H. C. Fall.

This species is like *arcuatus*, a very stocky and globose one, but it is also conspicuously setose like the two which follow though with the setæ far less abundant.

Sciopithes sordidus Van Dyke, new species

Moderately elongate, rufous or piceous, rather densely clothed with closely appressed and imbricated gray and dark brown scales and distinctly setose, the gray scales dominating below, the brown chiefly confined to two broad stripes on the pronotum and to the disk of the elytra, in some cases, chiefly males, covering all of the disk, in others, especially the larger females, often broken up into macules. Head about as long as prothorax, gradually narrowed forwards; front with an elongate groove between the eyes and numerous deep and scattered punctures with short setæ arising from them, interocular space about equal to width of eyes; rostrum with a fine dorsal carina in line with the frontal groove, eyes much flattened; antennæ rather robust, scape extending but little beyond front margin of prothorax, outer funicular segments less than twice as long as wide, club about two and a half times as long as wide. Prothorax slightly broader at middle than long, sides well rounded at middle, constricted near base and apex; disk coarsely, deeply and rather closely punctured, the punctures sometimes approximate or even anastomosing, general surface as a result slightly rugose; scales confined to intervals and not concealing the punctures, the setæ arising from the latter, extending well above and hooked forwards. Elytra elliptical, about twice as long as wide in males, hardly a third longer in females, finely striato-punctate; intervals broad and flat, each with numerous light and dark brown, rather closely placed, semierect setæ in addition to the scales, which are more or less arranged in rows, the individual setæ almost as long as the intervals are broad. Male, length 5.75 mm., breadth 2.25 mm.; female, length 6 mm., breadth 3 mm.

Holotype male (No. 3985) and allotype female (No. 3986, Mus. C.A.S., Ent.), from Cypress Ridge, near Woodacre, Marin Co., Calif, .collected May 11, 1919, by myself. Numerous paratypes will be designated from a series of twenty-five specimens,

collected by E. P. Van Duzee and myself from the same locality at various dates.

This species simulates *intermedius* in color and shape but is much larger, with more robust antennæ and longer and denser setæ, particularly on the elytra. It more closely approaches *insularis* and *setosus*, differing from the former by its more elongate body, darker color, more robust antennæ and denser elytral setæ; and from the latter by being somewhat smaller, darker in color, with outer funicular segments not transverse and the elytral setæ equally dense but slightly shorter and somewhat curved.

Sciopithes setosus Casey

This species is in general the largest and most robust of the genus. Its distinctive features are its generally gray color with the elytral disk bounded by an irregular and broken band of dark brown or black scales; the antennæ robust with scape just reaching the front margin of prothorax and outer funicular segments transverse, and the rather dense and long, more or less straight setæ, conspicuous on the pronotum but longer and better seen on the elytra. Several of my specimens have been carefully compared with the type. It is more or less widely distributed throughout the San Francisco Bay region, but inclined to be quite local as to occurrence, therefore uncommon in collections.

Tribe Simoini

Genus Paraptochus Seidlitz

This genus was established by Seidlitz in 1868 for *californicus*, a species received from California. Later on this was sunk as a synonym of Boheman's *Peritelus sellatus* but the generic name was retained. For a long time there was thought to be but one species in the genus but in recent years two other species have been discovered. The original *sellatus* was found near San Francisco, the new ones are from southern California. The Seidlitz description might refer to one of the latter for it is not very definite. The possibilities are that at the early date when he received his specimen, all collectors in California were concentrated in the San Francisco Bay District and that he received his specimen from one of these. The specimens upon which Horn drew up his description were also no doubt the true *sellatus*

for they were collected at Crystal Springs, San Mateo Co., a few miles south of San Francisco.

Key to Species

1. Species very globose, elytra very convex; transverse impression at base of rostrum slight, upper surface of front and rostrum therefore more or less flat and continuous; elytral setæ long and hair-like, as long as breadth of intervals, and erect; color pattern distinctly contrasting, the lower surface cinereous. San Francisco Bay region.....*sellatus* (Boh.)

—. Species more elongate, elytra more elliptical and less convex above; transverse impression at base of rostrum pronounced, rostrum arcuate; elytral setæ shorter, stouter, and not as long as breadth of intervals.....2

2. Color pattern more or less contrasting, generally lighter below and dark on disk; elytra longitudinally feebly convex from base to declivity, intervals flat, the setæ sparse and erect. Mts. of southern Calif.....*setiferus* n. sp.

—. Color a uniform earthy brown; elytra somewhat flattened on disk, intervals feebly convex especially behind, the setæ more numerous and often somewhat inclined. Carpinteria, Calif. .....*uniformis* n. sp.

Paraptochus sellatus (Boheman)

The true *sellatus* is rare in collections. What has generally been taken for such is a species from the mountains of southern California which I am describing as *setiferus*. The characteristic features of *sellatus* are its robustness, many specimens having the afterbody quite globose, the flatness of the head above, the transverse impression at the base of the rostrum being very shallow; the long, erect, moderately abundant, hair-like setæ of the elytra; and the generally lighter color of the beetles, the scales of the lower parts being as a rule silvery gray and those of the disk a golden brown.

The published localities for this species are San Francisco (Boheman) and Crystal Lake, San Mateo Co. (Crotch and Horn). The California Academy has typical specimens from several places in Marin Co., Sonoma Co. and Contra Costa Co.

Paraptochus setiferus Van Dyke, new species

Moderately robust, densely clothed with closely appressed, imbricated scales, the upper surface also furnished with conspicuous, rigid and semierect setæ; the scales in most cases a dark brown

variously mixed with silvery gray, or there may be a more or less well defined color pattern as in *sellatus* with lighter scales below and a large patch of darker scales on the disk, the latter separated from the former by a somewhat broken band of black scales on the elytra and the prothorax with lateral white bands. Head with front flattened, a fine median groove and setæ, the last most marked above eyes; rostrum slightly longer than head, broad, arcuate, its sides rather straight and parallel with a fine median longitudinal carina above, often concealed by the scales, conspicuous short, erect setæ and a well impressed transverse groove at base; eyes not prominent; scape of antennæ arcuate, but little longer than funicle and just reaching front margin of prothorax. Prothorax subcylindrical, slightly broader than long, about equal in length to head; base and apex truncate, a bit narrowed in front, the sides but slightly arcuate; disk rather deeply, sparsely yet regularly punctured, with short, forwardly inclined setæ arising from them. Elytra elliptical, a fourth longer than broad, disk as seen in silhouette but feebly arched, declivity broadly rounded, striæ sharply impressed and rather finely, moderately closely punctured, intervals flattened in front, feebly convex behind, each with a row of well spaced, robust, semi-erect setæ that are about as long as one-half the width of an interval. Beneath densely squamose and sparsely setose, the setæ much inclined and arising from fine punctures. Length 6.5 mm., breadth 3.25 mm.

Holotype (No. 3987, Mus. C.A.S., Ent.) and five paratypes collected by myself, at Forest Home, San Bernardino Co., Calif., June 13 and 14, 1928. I also have other quite typical specimens from Idyllwild, Riverside Co., Calif., July 2, 1928, and Lytle Creek, San Bernardino Co., Calif., June 8, 1928, and have tentatively associated with this series, some smaller specimens from Mt. Wilson, Sierra Madre, Pasadena, and other places in Los Angeles Co., as well as from Placentia, Orange Co., and Ventura Co., Calif. Some of these have the setæ longer or more hair-like but are otherwise the same.

This species is evidently a very plastic one. From *sellatus* it differs by being generally darker in color, by having the transverse impression at base of rostrum well marked, the rostrum arcuate, feebly sulcate above, the eyes somewhat more prominent causing the head at sides to be broadly rounded to rostrum not gradually narrowed, the prothorax less transverse, the elytra more elliptical and less globose; the afterbody as a whole with far less depth, and the elytral setæ stouter and shorter.

Paraptochus uniformis Van Dyke, new species

Moderately robust, somewhat narrowed and elongate, densely clothed throughout with dark brown or dirt-colored scales which are but slightly imbricated, the upper surface also setose; setæ short and inclined forwards on head and pronotum, longer and suberect on elytra. Head with front flattened, rostrum slightly longer than head, broad, parallel sided, longitudinally arcuate, broadly sulcate above, with the remnant of a carina and with a well defined transverse impression at base; eyes moderately prominent; scape of antennæ arcuate, distinctly shorter than funicle and just reaching beyond front margin of prothorax. Prothorax a sixth broader than long, moderately well rounded at sides and narrowed in front; disk rather coarsely, sparsely punctured though punctures in great part concealed by scales and with setæ arising from them. Elytra oval, almost a third longer than broad, the disk but feebly convex as seen in profile, declivity well rounded; striæ moderately impressed yet not sharply definied because of scales, and finely punctured; intervals flat in front, convex behind, with median row of suberect, well spaced rather stout setæ, each seta about as long as one-half the width of an interval. Beneath as in preceding species. Length 6.5 mm., breadth 2.75 mm.

Holotype (No. 3988, Mus. C.A.S., Ent.) and several designated paratypes from a series of twenty-four specimens collected at Carpinteria, Calif., July 21, 1933.

This species resembles the preceding in many ways but differs in being proportionally narrower and more elongate, of a uniform color, with the rostrum more deeply sulcate above, the eyes slightly more prominent so that they protrude beyond the side margin of head, the antennæ longer, the prothorax more suddenly and distinctly narrowed in front, and the elytra oval in outline, not elliptical.

Stenoptochus vanduzeei Van Dyke, new species

Short, robust, black, antennæ and legs somewhat rufous, the entire body densely clothed with closely appressed cinereous scales, somewhat darker on upper surface and moderately setose, the setæ above somewhat erect Head robust, front and upper surface of rostrum flattened with a fine median linear impression; beak broad, dilated apically, scrobes short and deep, feebly convergent above but not reaching eyes; antennæ robust, scape barely reaching front margin of prothorax, outer segments of funicle transverse; eyes large but quite flat. Prothorax transverse, over a third broader than long, base and apex truncate, sides feebly arcuate; disk with well spaced punctures more or less concealed by scales but with

short scale-like setæ projecting from them. Elytra subglobose, one-third longer than broad; striæ finely impressed and rather finely, somewhat closely punctured; intervals flat, very feebly convex behind, each with an irregular row of stout, erect, white setæ, separated by about their own length which is in general more than half the width of an interval. Undersurface with scales generally longer and more club-like and apically mixed with fine pile. Length 6 mm., breadth 3 mm.

Holotype (No. 3989, Mus. C.A.S., Ent.) and one paratype, collected at Mill Valley, Marin Co., Calif., June 8, 1928, the first by E. P. Van Duzee, the second by J. O. Martin.

This species is very much more robust in every regard than *inconstans* Csy., the genotype, but appears to agree generically. Superficially it resembles a *Tricolepis*.

Omias albus Van Dyke, new species

Short, afterbody subglobular, black, antennæ, tibiæ and tarsi more or less rufous, rather densely clothed with long, closely appressed, hair-like scales, and sparsely pilose, the hair moderately short, fine and semierect. Head with front flattened, a fovea between eyes, and rather finely, moderately punctured, the last giving rise to the hair-like scales; the rostrum about as long as head, quadrate, feebly arched, sulcate above and separated from front by a shallow transverse impression; scrobes deep and elliptical, scape feebly arcuate, barely reaching front margin of prothorax, funicle somewhat longer, all segments longer than broad though the seventh is suddenly larger, quite transverse and almost as broad as long, the club oval; eyes rather small, not projecting laterally beyond side margin of head. Prothorax transverse, a third broader than long, base and apex truncate, sides arcuate at middle, narrowed at base and very much more constricted in front; disk somewhat closely, coarsely punctured but with punctures generally concealed by vestiture. Elytra subglobose, hardly one-seventh longer than broad; striæ feebly impressed but with distinct, closely placed punctures; intervals flat and finely rugose, the odd ones more densely squamose giving the body a vittate appearance. Length 5.5 mm., breadth 2.75 mm.

Holotype (No. 3990, Mus. C.A.S., Ent.) and numerous paratypes from a series of eighteen specimens collected at Lind, Wash., May 15 and June 3, 1931, by M. C. Lane, to whom I am indebted for the specimens.

This species differs from *saccatus* (Lec.) by having the afterbody less globular, prothorax less broad, primal vestitute more scale-like and secondary pilosity quite evident, whereas it is not observable in the other species.